

	L #	Hits	Search Text	DBs	Time Stamp
1	L3	14987	biolumines\$ or fluorescen\$ near4 protein\$1 or luciferase\$1 or photoprotein\$1	USPAT; US-PGPUB	2003/02/24 15:09
2	L4	13461 5	bubble\$	USPAT, US-PGPUB	2003/02/24 15:10
3	L5	878	3 and 4	USPAT, US-PGPUB	2003/02/24 15:10
4	L6	15	3 same 4	USPAT, US-PGPUB	2003/02/24 17:01
5	L7	68310	toy or novelty	USPAT, US-PGPUB	2003/02/24 15:40
6	L8	30	5 and 7	USPAT, US-PGPUB	2003/02/24 15:40
7	L9	17	3 same 7	USPAT; US-PGPUB	2003/02/24 17:01
8	L10	20	3 and toy	USPAT; US-PGPUB	2003/02/24 17:09
9	L11	13	10 not 8	USPAT; US-PGPUB	2003/02/24 17:25
10	L12	22	3 and novelty adj item\$1	USPAT; US-PGPUB	2003/02/24 17:24
11	L13	12	12 not 8	USPAT; US-PGPUB	2003/02/24 17:25
12	L14	228	((chemilumines\$ or lumines\$8 or glow\$8) same 4) not 3	USPAT; US-PGPUB	2003/02/24 17:47
13	L15	20	((chemilumines\$ or lumines\$8 or glow\$8) near4 4) not 3	USPAT; US-PGPUB	2003/02/24 17:47

PGPUB-DOCUMENT-NUMBER: 20030008135

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030008135 A1

TITLE: Conductive film

PUBLICATION-DATE: January 9, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Kawamura, Koichi	Shizuoka-ken		JP	
Takahashi, Miki	Shizuoka-ken		JP	
Yagihara, Morio	Shizuoka-ken		JP	
Nakayama, Takao	Shizuoka-ken		JP	

APPL-NO: 10/ 179210

DATE FILED: June 26, 2002

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	DOC-ID	APPL-DATE
JP	2001-195449	2001JP-2001-195449	June 27, 2001
JP	2001-261052	2001JP-2001-261052	August 30, 2001
JP	2001-325089	2001JP-2001-325089	October 23, 2001

US-CL-CURRENT: 428/336,428/208 ,428/328 ,428/411.1

ABSTRACT

The present invention relates to a conductive film excellent in electrical conductivity and durability and useful for display elements and solar cells. In particular, the invention relates to a conductive film comprising conductive fine particles adsorbed to a support, a conductive film comprising a transparent conductive layer such as an ITO layer provided on a support, and a conductive film comprising a conductive polymer layer, instead of the ITO layer, formed on a support.

----- KWIC -----

Detail Description Paragraph - DETX:

[0119] The film, which had been subjected to the **glow treatment, was immersed in a nitrogen bubbled** solution of sodium styrene sulfonate (10 wt %) for 7 hours at 70.degree. C. The immersed film was washed with water for 8 hours to thereby obtain a polymer support (support A) on which sodium styrene sulfonate

PGPUB-DOCUMENT-NUMBER: 20020158949

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020158949 A1

TITLE: Ink jet recording apparatus using recording unit with ink cartridge
having ink inducing element

PUBLICATION-DATE: October 31, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Ujita, Toshihiko	Kanagawa		JP	
Takenouchi, Masanori	Kanagawa		JP	
Tsukuda, Keiichiro	Kanagawa		JP	

APPL-NO: 10/ 128389

DATE FILED: April 24, 2002

RELATED-US-APPL-DATA:

child 10128389 A1 20020424 parent division-of 09016322 19980130 US PENDING
child 09016322 19980130 US parent division-of 08669644 19960624 US GRANTED
parent-patent 5784088 US child 08669644 19960624 US parent continuation-of
08165843 19931214 US ABANDONED

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	DOC-ID	APPL-DATE
JP	179,195/1993	1993JP-179,195/1993	July 20, 1993
JP	298,370/1993	1993JP-298,370/1993	November 29, 1993
JP	298,500/1993	1993JP-298,500/1993	November 29, 1993
JP	298,501/1993	1993JP-298,501/1993	November 29, 1993

US-CL-CURRENT: 347/86

ABSTRACT:

An ink cartridge (3) including an ink reservoir portion having a porous member (37) for storing ink and an ink supply portion (39) has an ink inducing element (47) disposed between the ink reservoir portion and the ink supply portion (39). The ink inducing element (47) is made of bundle of fibers in which each fiber is disposed in parallel to the direction of ink supplying from the ink reservoir to the ink supply portion (39), and one end of the ink inducing element (47) is press-touched to the porous member (37).

Detail Description Paragraph - DETX:

[0202] However, occasionally a size of the air bubbles become glowing within the period described above under a bad environmental condition such as under both an extremely high temperature and a low relative humidity, and these grown air bubbles interrupt the ink flow to the recording head to cause its poor printing abilities. Especially in case of that the valve mechanism 614 is driven at the time of connecting or separating the ink-jet recording head 602 and the ink cartridge 601 as shown in FIG. 8A, the air from the outside may be introduced into a certain region of the ink path, which corresponds to an extent of the valve movement or the like. Therefore, the valve mechanism makes an unfavorable condition under the environment described above.

PGPUB-DOCUMENT-NUMBER: 20020057315

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020057315 A1

TITLE: INK JET PRINT HEAD AND INK JET PRINTING DEVICE MOUNTING THIS HEAD

PUBLICATION-DATE: May 16, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
TOUGE, YOSHIYUKI		SAGAMIHARA-SHI		JP
MURAKAMI, SHUICHI		KAWASAKI-SHI		JP
INOUE, TAKASHI	TOKYO			JP

APPL-NO: 09/ 203394

DATE FILED: December 2, 1998

CONTINUED PROSECUTION APPLICATION: This is a publication of a continued prosecution application (CPA) filed under 37 CFR 1.53(d).

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	DOC-ID	APPL-DATE
JP	9-336052	1997JP-9-336052	December 5, 1997
JP	10-337211	1998JP-10-337211	November 27, 1998

US-CL-CURRENT: 347/65

ABSTRACT:

An ink jet print head has plural electrothermal converting elements for generating energy used to discharge an ink droplet, plural ink discharging ports arranged above the electrothermal converting elements and discharging the ink droplet, plural ink flowing paths respectively communicated with the plural ink discharge ports and internally including the electrothermal converting elements, a substrate for arranging the plural electrothermal converting elements in a columnar shape and having an ink supplying port constructed by a through port which is connected with the ink flowing paths and extends along an arranging direction of the electrothermal converting elements, and a discharging port plate having the ink discharge ports. The ink flowing paths are formed between the substrate and the discharging port plate by junctioning the discharging port plate onto the substrate. The ink jet print head further has a fluid resisting device of the ink flowing paths in which a side of the ink supplying port is opened in the vicinity of a communication portion of the ink flowing paths in an ink supplying port projecting are of the discharging port plate.

----- KWIC -----

Detail Description Paragraph - DETX:

[0055] In this embodiment, the surface of a projecting portion is set to have a lyophilic ink property so as to further preferably prevent the attachment of a bubble in a state in which the surface of the projection portion includes the surface of a discharging port plate (an ink supplying port projecting area of the discharging port plate) on an ink flowing path side just above the ink supplying port. Since this portion is set to have the lyophilic ink property, it is greatly reduced that the bubble is attached to the discharging port plate and an end tip of the projection. If the bubble is attached, the bubble is separated from an end tip portion of the projection and stays in the ink supplying port of the ink jet print head or is again dissolved into ink in an intermediate glowing process of the bubble in which no bubble yet has an influence on ink droplet discharge. Namely, in the construction in this embodiment, no residual bubble is easily attached to the discharging port plate and the projecting portion in comparison with the conventional case. Further, even if the residual bubble is grown, the residual bubble is sucked into an ink flowing path so that no ink within the ink flowing path is divided into pieces. Accordingly, this construction does not easily cause a phenomenon in which the supply of the ink to the ink flowing path becomes insufficient and the ink within the ink jet print head becomes empty by communication with the atmosphere.

PGPUB-DOCUMENT-NUMBER: 20020001023

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020001023 A1

TITLE: INK JET RECORDING APPARATUS USING RECORDING UNIT WITH INK
CARTRIDGE
HAVING INK INDUCING ELEMENT

PUBLICATION-DATE: January 3, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
UJITA, TOSHIHIKO	YAMATO-SHI		JP	
TAKENOUCHI, MASANORI	YOKOHAMA-SHI			JP
TSUKUDA, KEIICHIRO	KAWASAKI-SHI		JP	

APPL-NO: 09/ 016322

DATE FILED: January 30, 1998

CONTINUED PROSECUTION APPLICATION: This is a publication of a continued prosecution application (CPA) filed under 37 CFR 1.53(d).

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	DOC-ID	APPL-DATE
JP	179195/1993	1993JP-179195/1993	July 20, 1993
JP	298370/1993	1993JP-298370/1993	November 29, 1993
JP	298500/1993	1993JP-298500/1993	November 29, 1993
JP	298501/1993	1993JP-298501/1993	November 29, 1993

US-CL-CURRENT: 347/86

ABSTRACT:

An ink cartridge (3) including an ink reservoir portion having a porous member (37) for storing ink and an ink supply portion (39) has an ink inducing element (47) disposed between the ink reservoir portion and the ink supply portion (39). The ink inducing element (47) is made of bundle of fibers in which each fiber is disposed in parallel to the direction of ink supplying from the ink reservoir to the ink supply portion (39), and one end of the ink inducing element (47) is press-touched to the porous member (37).

----- KWIC -----

Detail Description Paragraph: DETY

[0200] However, occasionally a size of the air bubbles become glowing within the period described above under a bad environmental condition such as under both an extremely high temperature and a low relative humidity, and these grown air bubbles interrupt the ink flow to the recording head to cause its poor printing abilities. Especially in case of that the valve mechanism 614 is driven at the time of connecting or separating the ink-jet recording head 602 and the ink cartridge 601 as shown in FIG. 8A, the air from the outside may be introduced into a certain region of the ink path, which corresponds to an extent of the valve movement or the like. Therefore, the valve mechanism makes an unfavorable condition under the environment described above.

US-PAT-NO: 6454399

DOCUMENT-IDENTIFIER: US 6454399 B2

TITLE: Ink jet recording apparatus using recording unit with ink cartridge having ink inducing element

DATE-ISSUED: September 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ujita; Toshihiko	Yamato	N/A	N/A	JP
Takenouchi; Masanori	Yokohama	N/A	N/A	JP
Tsukuda; Keiichiro	Kawasaki	N/A	N/A	JP

APPL-NO: 09/ 016322

DATE FILED: January 30, 1998

PARENT-CASE:

This application is a division of application Ser. No. 08/669,644, filed Jun. 24, 1996, now U.S. Pat. No. 5,784,088, which is a continuation of application Ser. No. 08/165,843, filed Dec. 14, 1993, now abandoned.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	5-179195	July 20, 1993
JP	5-298370	November 29, 1993
JP	5-298500	November 29, 1993
JP	5-298501	November 29, 1993

US-CL-CURRENT: 347/86; 347/92

ABSTRACT:

An ink cartridge (3) including an ink reservoir portion having a porous member (37) for storing ink and an ink supply portion (39) has an ink inducing element (47) disposed between the ink reservoir portion and the ink supply portion (39). The ink inducing element (47) is made of bundle of fibers in which each fiber is disposed in parallel to the direction of ink supplying from the ink reservoir to the ink supply portion (39). and one end of the ink inducing element (47) is press-touched to the porous member (37).

5 Claims. 67 Drawing figures

Exemplary Claim Number: 5

Number of Drawing Sheets: 29

----- KWIC -----

Detailed Description Text - DETX:

However, occasionally a size of the air **bubbles become glowing** within the period described above under a bad environmental condition such as under both an extremely high temperature and a low relative humidity, and these grown air bubbles interrupt the ink flow to the recording head to cause its poor printing abilities. Especially in case of that the valve mechanism 614 is driven at the time of connecting or separating the ink-jet recording head 602 and the ink cartridge 601 as shown in FIG. 8A, the air from the outside may be introduced into a certain region of the ink path, which corresponds to an extent of the valve movement or the like. Therefore, the valve mechanism makes an unfavorable condition under the environment described above.

US-PAT-NO: 6435196

DOCUMENT-IDENTIFIER: US 6435196 B1

TITLE: Impurity processing apparatus and method for cleaning impurity processing apparatus

DATE-ISSUED: August 20, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Satoh; Noritada	Tokyo	N/A	N/A	JP
Ohira; Kouichi	Tokyo	N/A	N/A	JP
Matsui; Bunya	Tokyo	N/A	N/A	JP
Maeda; Kazuo	Tokyo	N/A	N/A	JP

APPL-NO: 09/ 451706

DATE FILED: December 1, 1999

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	11-227618	August 11, 1999

US-CL-CURRENT: 134/1.1; 216/60 ; 216/67 ; 216/68 ; 216/69

ABSTRACT:

The present invention relates to an impurity processing apparatus in which impurities such as phosphorus, boron, or the like are doped in a semiconductor substrate, etc., or a PSG (PhosphoSilicateGlass) film, a BSG (BoroSilicateGlass) film, or a BPSG (BoroPhosphoSilicateGlass) film, or a carbon film, etc. This apparatus includes a chamber having an introduction port for an impurity-containing ion gas which is connected to an impurity-containing gas supply section, a substrate holder supporting a substrate which is to be ion-injected, or doped, or on which a film is formed using the impurity-containing gas, an introduction port of a water-containing gas which is provided upstream of the substrate holder in accordance with a flow direction of the impurity-containing gas, and is connected to a water-containing gas supply section, and first plasma generating means in a space extending from the introduction port for water-containing gas to the substrate holder for converting water-containing gas to a plasma.

5 Claims, 9 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 7

----- KWIC -----

Detailed Description Text - DETX:

Furthermore, when a partition wall of the process chamber 11 is formed of aluminum, if the by-product is removed only by the water vapor as described above, as an alumina film is formed on the inner wall of the process chamber 11 or the surface of the electrode, an abnormal discharge due to charge-up easily occurs. Then, the water vapor is mixed with hydrogen or an argon gas. In this case, it is preferable that hydrogen or argon gas is added to the water vapor in the amount of about 50% by volume. Alternatively, hydrogen or an argon gas is **bubbled through water, and a glow** discharge is caused under the above-described conditions by use of hydrogen or the argon gas containing water. As the alumina film is not formed by adding hydrogen or the argon gas thereto, a stable discharge can be attained.

US-PAT-NO: 6375342

DOCUMENT-IDENTIFIER: US 6375342 B1

TITLE: Illuminated waterfall

DATE-ISSUED: April 23, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Koren; Pinhas Paul	Altamonte Springs	FL	N/A	N/A
Bernota; Laurie Beth	Altamonte Springs	FL	N/A	N/A

APPL-NO: 09/ 630500

DATE FILED: August 2, 2000

PARENT-CASE:

This application claims the benefit of the Mar. 17, 2000, filing date of United States provisional patent application serial no. 60/190,432.

US-CL-CURRENT: 362/562; 239/18 ; 362/565 ; 362/806 ; 362/96

ABSTRACT:

A waterfall illuminated by a plurality of optical fibers having their ends disposed along an underside of the edge of the waterfall and directing light downward from the fiber ends onto the surfaces under the waterfall. A fiber optic cable bundle is directed within a fiber conduit along the edge of a generally rectangular water conduit, with the individual fiber ends projecting through respective holes formed in an underside of the fiber conduit. The water and fiber conduits may be located between a wall of a pool or spa and the surrounding coping, with both water and fiber connections being made from the rear portion of the device.

18 Claims, 2 Drawing figures

Exemplary Claim Number: 9

Number of Drawing Sheets: 1

----- KWIC -----

Detailed Description Text - DETX:

Fiber optic cable bundle 12 is enclosed within a fiber conduit 38 attached to a

edge 22. A plurality of holes 40 are formed along the underside of fiber conduit 38, and the output ends 42 of the respective individual fibers 14 are disposed in or through the holes 40 to direct light downward onto surfaces 44 located under the waterfall 32. Advantageously, light emitted from the fiber ends 42 illuminates the surface of the wall 24 and the pool of water 26 under the waterfall 32. The applicant has found that such illumination provides a pleasing **glow and lighting effect as the bubbles** and currents formed in the pool of water 26 by the action of the waterfall 32 reflects and refracts the light back to the observer. The input ends 46 of the fibers 14 may be connected to a light source 48, as is known in the art, for providing white light or light of one or more predetermined wavelengths.

US-PAT-NO: 6172658

DOCUMENT-IDENTIFIER: US 6172658 B1

TITLE: Bubble imaging technology

DATE-ISSUED: January 9, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Romberg; Frederick W.	La Canada	CA	N/A	N/A

APPL-NO: 09/ 437824

DATE FILED: November 10, 1999

PARENT-CASE:

SPECIFIC REFERENCE The inventor hereby claims benefit of priority date so established for provisional application No. 60/108,267, filed Nov. 12, 1998 for Bubble Imaging Technology.

US-CL-CURRENT: 345/30; 40/406 ; 40/407 ; 40/439

ABSTRACT:

A method and apparatus for producing an image defined by fluid bubbles in a medium fluid. Alphanumeric digits and/or graphic images in a fluid medium are formed by injecting into the fluid medium a multitude of fluid bubbles having a density different than that of the medium fluid.

Using non-gaseous fluids, the fluid bubbles take on a natural shape which is not confined by any structures as it travels through the medium fluid. The rate at which the fluid bubbles rise or fall through a medium fluid is directly dependent on the viscosity of the individual fluids and the difference between the fluid viscosities. The viscosity of the medium fluid also influences the rate of formation of bubbles which are being created. The control and timing circuitry determines the time interval wherein each horizontal row of bubbles is created. The rows of bubbles then create a 2-D or 3-D image, conducive for various applications as signs or displays.

25 Claims. 13 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 9

Detailed Description Text - DETX:

The fluids subsystem 10 provides the desirable fluid environment wherein fluid bubbles are produced by the bubble generation subsystem 14. A BIT product 1 utilizing the present method, in this embodiment a clock, requires at least two fluids. Satisfying this requirement is a bubble fluid 21 contained within a fluid separator and housing subsystem 12 and a medium fluid 22, which differ in color such that one is visible in the other. The fluids also have different densities and viscosities such that the fluid bubbles 20 will either rise or sink within the medium fluid 22. The medium fluid 22 is either clear or colored but must remain transparent so that the bubbles are completely visible within the medium fluid 22. The bubble fluid 21 producing the fluid bubbles 20 is either clear or colored and can be either transparent, opaque or somewhere in between. The bubble fluid 21 and the medium fluid 22 are different enough in color and intensity that there is a significant contrast between them. The preferred design consists of a blue or green glow-in-the-dark bubble fluid 21 and a clear medium fluid 22.

US-PAT-NO: 5969207

DOCUMENT-IDENTIFIER: US 5969207 A

TITLE: Method for changing the qualitative and quantitative composition of a mixture of liquid hydrocarbons based on the effects of cavitation

DATE-ISSUED: October 19, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kozyuk, Oleg V.	Cleveland	OH	44135	N/A

APPL-NO: 08/ 555980

DATE FILED: November 13, 1995

PARENT-CASE:

This application is a continuation in part of application Ser. No. 08/191,251, filed Feb. 2, 1994, now abandoned.

US-CL-CURRENT: 208/106;422/127 ;422/128 ;422/312 ;585/922 ;585/923 ;585/925 ;585/934

ABSTRACT:

The proposed method comprises passing the hydrodynamic flow of liquid hydrocarbons through a flow-through passage accomodating a baffle body providing for a local constriction of the flow; establishing the local flow constriction on at least one portion of the flow-through passage whose cross-sectional profile area is so selected as to maintain such a velocity of the flow on the portion of the passage that promotes the development of a hydrodynamic cavitation field past the baffle body having the degree of cavitation of at least one; processing the flow of a mixture of liquid hydrocarbons in the hydrodynamic cavitation field to initiate chemical transformations of liquid hydrocarbons resulting in a change in the qualitative and quantitative composition of the mixture of liquid hydrocarbons.

20 Claims. 10 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 2

----- KWIC -----

In addition, the collapsing of the cavitation bubbles is accompanied by some electrical effects, luminescence, and generation of broad-spectrum shock waves and acoustic vibrations. As a result, the collapsing bubbles act as a kind of catalyst that initiates the progress of chemical reactions.

US-PAT-NO: 5961894

DOCUMENT-IDENTIFIER: US 5961894 A

TITLE: Black light bubbles

DATE-ISSUED: October 5, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Swetland, Jr.; Wallace	Gaithersburg	MD	20878	N/A
Byron	Gaithersburg	MD	20878	N/A
Swetland; Melody Sue				

APPL-NO: 09/ 105260

DATE FILED: June 26, 1998

US-CL-CURRENT: 252/700; 252/301.16 ; 252/301.33 ; 252/587 ; 252/588 ; 252/589

ABSTRACT:

Bubbles are formed for entertainment and decorative purposes utilizing a liquid solution that includes a sufficient amount of a surface active agent to form the bubbles and a sufficient amount of a fluorescent agent to provide illumination of the bubbles when viewed in the dark and under an external source of invisible ultraviolet or infrared radiation, such as a black light. The bubble solution is a pre-mixed, non-toxic solution that includes the surface active agent, or soap, to provide formation of the bubble and a fluorescent agent such as Radiant.RTM. fluorescent pigment dispersions to react to the illumination under the external source of invisible ultraviolet or infrared radiation such as a black light. Alternatively, the solution may be spread on a surface in decorative designs to be illuminated with the black light.

17 Claims, 0 Drawing figures

Exemplary Claim Number: 1

----- KWIC -----

Brief Summary Text - BSTX:

One example of a limited approach to creating special-effects bubbles is U.S. Pat. No. 5,246,631 Self-Illuminated Bubbles. This patent embodies a combination of a **chemiluminescent agent with a bubble solution to produce bubbles that glow** in the dark. Self-Illuminated Bubbles do not, however

radiation source. An additional significant limitation of the Self-Illuminated Bubbles is that the product is delivered in component parts that manually must be prepared prior to blowing the bubbles. The **bubble solution must be mixed with the chemiluminescent** agent by the consumer immediately prior to use. Requiring the consumer to mix the product is time-consuming and messy. Moreover, young children would need the assistance of an older person to mix the solution before using it.

Brief Summary Text - BSTX:

Two more examples of special effects bubbles, by the same inventor, are U.S. Pat. No. 4,284,534, Aqueous Bubble Blowing Composition, and U.S. Pat. No. 4,511,497. Bubble Composition Using Multipurpose Surfactant Base (hereinafter collectively referred to as "Bubble Compositions"). Bubble Compositions are chemical patents that describe bubble solutions capable of accepting many different additives to produce various special effects, such as long-distance flying bubbles that withstand wind turbulence and evade collision; a stream of 80 to 120 floating bubbles; bubbles that burst with a crackle noise; and colored bubbles that turn into flakes. **Bubble Compositions do not embody bubbles that glow** under dark conditions. Specifically, Bubble Compositions do not describe **bubble solutions that glow** under an external ultraviolet or infrared radiation source.

Brief Summary Text - BSTX:

While the field of using bubble solutions for entertainment and recreational purposes is saturated with products that are used to form the bubbles from a basic soapy bubble solution, little progress has been made in the area of modifying the bubble solution itself, rather than the bubble blowing product, to produce a varied form of bubble entertainment. Of the few inventions that have modified the bubble solution itself to create special effects **bubbles**, **none contemplate bubbles that will glow** in the dark under an external ultraviolet or infrared radiation source, such as a black light.

Brief Summary Text - BSTX:

The current invention, the black light bubbles solution, is directed to a method of forming **bubbles that glow** in various colors when viewed in the dark and under an ultraviolet or infrared radiation source, such as a black light. The black light **bubbles solution achieves its glowing** effect through fluorescence. The invention comprises a bubble solution combined with a fluorescent agent to provide illumination of the bubbles when viewed under an external source of invisible ultraviolet or infrared radiation. Fluorescence is defined as "the emission of electromagnetic radiation, especially of visible light, resulting from the absorption of incident radiation and persisting only as long as the stimulating radiation is continued." AMERICAN HERITAGE DICTIONARY, 2nd Edition (1985). In this invention, an external source of invisible ultraviolet or infrared radiation, such as a black light, serves as the incident radiation or stimulating radiation. Consequently, this invention

embodies a chemical reaction between the bubble solution containing a fluorescent agent with an external radiation source to achieve the glowing effect; or through fluorescence.

Brief Summary Text - BSTX:

One example of a limited special-effects bubble solution is U.S. Pat. No. 5,246,631, Self-Illuminated Bubbles. This patent embodies a combination of a **chemiluminescent agent with a bubble solution to produce bubbles that glow** in the dark. Self-Illuminated Bubbles do not, however, illuminate under a black light or other external ultraviolet or infrared radiation source. Self-Illuminated Bubbles depends on a chemical reaction taking place within the bubble solution itself, after the consumer has mixed together the components parts. to create **bubbles that glow** in the dark. This chemical reaction takes place between a **chemiluminescent agent and the bubble solution through chemiluminescence**. Chemiluminescence is defined as, "the emission of light as a result of a chemical reaction at environmental temperatures." AMERICAN HERITAGE DICTIONARY, 2nd Edition (1985). Self-Illuminated **Bubbles describes the chemiluminescent** agent used to achieve the self-glowing effect as a combination of various chemicals including an oxalate diester, a peroxide, and a fluorescenter. The oxidate is necessary for the chemiluminescent reaction; the fluorescenter is required for light emission with each type of fluorescenter giving off a characteristic color; and the peroxide, or activator, is used to initiate the chemical reaction. No light or color emission is possible without the reactor. Consequently, the invention embodied in Self-Illuminated Bubbles requires a chemical reaction that takes place within the **bubble solution itself to achieve the glow**-in-the-dark effect; or through chemiluminescence.

Brief Summary Text - BSTX:

Self-Illuminated Bubbles require that the consumer mix the **bubble solution with the chemiluminescent** agent immediately prior to use. Requiring the consumer to mix the product is time-consuming and messy. Moreover, young children would need the assistance of an older person to mix the solution before using it. Black Light Bubbles is delivered to the consumer pre-mixed and ready for use. The consumer is not required to measure or mix any ingredients.

Brief Summary Text - BSTX:

Two more examples of special effects bubbles are U.S. Pat. No. 4,284,534, Aqueous Bubble Blowing Composition, and U.S. Pat. No. 4,511,497, Bubble Composition Using Multipurpose Surfactant Base (hereinafter collectively referred to as "Bubble Compositions"). Bubble Compositions are chemical patents that describe bubble solutions capable of accepting many different additives to produce various special effects, such as long-distance flying bubble that withstand wind turbulence and evade collision; a stream of 80 to 120 floating bubbles; bubbles that burst with a crackle noise; and colored bubbles that turn into flakes. Despite the varied special effects suggested in Bubble Compositions, the patents do not describe a special effect, herein the

bubble solution will glow in dark conditions. Moreover, **Bubble Compositions do not encompass bubbles that glow** under an external source of ultraviolet or infrared radiation.

Brief Summary Text - BSTX:

Previous inventors of special effects **bubbles have not achieved a combination of bubbles that glow** in dark conditions and the use of a black light type of light emission under which to view the bubbles. Moreover, previous inventors who have used fluorescence and black light illumination to enhance their products have not applied the technology to entertainment uses directed toward children and young adults and have not combined the technology with recreational bubble solutions. This invention provides a new and unique method of entertainment, demonstration, and recreation using bubbles and fluorescence.

Detailed Description Text - DETX:

The current invention, black light bubble solution, discloses a method of forming **bubbles that glow** in various colors when viewed in the dark and under an ultraviolet or infrared radiation source, such as a black light. This invention utilizes a bubble solution combined with a non-toxic fluorescent agent to provide illumination of the bubbles when viewed under an external source of invisible ultraviolet or infrared radiation.

Other Reference Publication - OREF:

Chartrand, Sabra, "Chemical **Glow Lights Up Bubbles**," New York Times, Apr. 7, 1997, at D4.

US-PAT-NO: 5784088

DOCUMENT-IDENTIFIER: US 5784088 A

TITLE: Ink jet recording apparatus using recording unit with ink cartridge having ink inducing element

DATE-ISSUED: July 21, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ujita; Toshihiko	Yamato	N/A	N/A	JP
Takenouchi; Masanori	Yokohama	N/A	N/A	JP
Tsukuda; Keiichiro	Kawasaki	N/A	N/A	JP

APPL-NO: 08/ 669644

DATE FILED: June 24, 1996

PARENT-CASE:

This application is a continuation of application Ser. No. 08/165,843 filed Dec. 14, 1993, now abandoned.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	5-179195	July 20, 1993
JP	5-298370	November 29, 1993
JP	5-298500	November 29, 1993
JP	5-298501	November 29, 1993

US-CL-CURRENT: 347/86; 347/87 ; 347/93

ABSTRACT:

An ink cartridge (3) including an ink reservoir portion having a porous member (37) for storing ink and an ink supply portion (39) has an ink inducing element (47) disposed between the ink reservoir portion and the ink-supply portion (39). The ink inducing element (47) is made of bundle of fibers in which each fiber is disposed in parallel to the direction of ink supplying from the ink reservoir to the ink supply portion (39), and one end of the ink inducing element (47) is press-touched to the porous member (37).

44 Claims, 57 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 24

----- KWIC -----

Detailed Description Text - DETX:

However, occasionally a size of the air **bubbles become glowing** within the period described above under a bad environmental condition such as under both an extremely high temperature and a low relative humidity, and these grown air bubbles interrupt the ink flow to the recording head to cause its poor printing abilities. Especially in case off that the valve mechanism 614 is driven at the time of connecting or separating the ink-jet recording head 602 and the ink cartridge 601 as shown in FIG. 8A, the air from the outside may be introduced into a certain region of the ink path, which corresponds to an extent or the valve movement or the like. Therefore, the valve mechanism makes an unfavorable condition under the environment described above.

US-PAT-NO: 5717289

DOCUMENT-IDENTIFIER: US 5717289 A

TITLE: Thin film electroluminescent element easily regulating emitted light to white

DATE-ISSUED: February 10, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tanaka; Taizou	Tokyo	N/A	N/A	JP

APPL-NO 08/ 791774

DATE FILED: January 29, 1997

FOREIGN-APPL-PRIORITY-DATA

COUNTRY	APPL-NO	APPL-DATE
JP	8-014402	January 30, 1996

US-CL-CURRENT: 313/503; 313/506 ; 313/507

ABSTRACT:

A thin film electroluminescent element has a color changing layer doped with green luminescent material and red fluorescent material and separated from an electroluminescent layer for generating blue light for converting the blue light to green light and the green light to red light, and the separation results in reduction of trapping center in the electroluminescent layer.

7 Claims, 12 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 10

----- KWIC -----

Detailed Description Text - DETX:

FIG. 5 illustrates the blue light B incident onto the color changing medium 10a. As described hereinbefore, the color changing medium 10a contains the green luminescent dopant and the red fluorescent dopant, and dots and **bubbles** respectively stand for the green luminescent dopant and the red fluorescent dopant in FIG. 5. The blue light B partially passes through the color changing medium 10a and the glass substrate 11 and partially excites the green

B to green light G at a first predetermined conversion efficiency. The green light G partially passes through the color changing medium 10a and the glass substrate 11, and partially excites the red fluorescent dopant so as to convert the green light to red light R at a second predetermined conversion efficiency. The first conversion efficiency and the second conversion efficiency are appropriately adjusted, and the blue light B, the green light G and the red light R are equally emitted from the glass substrate 11. This results in white light.

US-PAT-NO: 5659173

DOCUMENT-IDENTIFIER: US 5659173 A

TITLE: Converting acoustic energy into useful other energy forms

DATE-ISSUED: August 19, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Putterman; Seth J.	Sherman Oaks	CA	N/A	N/A
Barber; Bradley Paul	Northridge	CA	N/A	N/A
Hiller; Robert Anthony	Los Angeles	CA	N/A	N/A
Lofstedt; Ritva Maire	Los Angeles	CA	N/A	N/A
Johanna				

APPL-NO: 08/ 201113

DATE FILED: February 23, 1994

US-CL-CURRENT: 250/361C; 376/100 ; 376/102 ; 376/149 ; 422/128 ; 422/26 ; 422/52

ABSTRACT:

Sonoluminescence is an off-equilibrium phenomenon in which the energy of a resonant sound wave in a liquid is highly concentrated so as to generate flashes of light. The conversion of sound to light represents an energy amplification of eleven orders of magnitude. The flashes which occur once per cycle of the audible or ultrasonic sound fields can be comprised of over one million photons and last for less 100 picoseconds. The emission displays a clocklike synchronicity; the jitter in time between consecutive flashes is less than fifty picoseconds. The emission is blue to the eye and has a broadband spectrum increasing from 700 nanometers to 200 nanometers. The peak power is about 100 milliWatts. The initial stage of the energy focusing is effected by the nonlinear oscillations of a gas bubble trapped in the liquid. For sufficiently high drive pressures an imploding shock wave is launched into the gas by the collapsing bubble. The reflection of the shock from its focal point results in high temperatures and pressures. The sonoluminescence light emission can be sustained by sensing a characteristic of the emission and feeding back changes into the driving mechanism. The liquid is in a sealed container and the seeding of the gas bubble is effected by locally heating the liquid after sealing the container. Different energy forms than light can be obtained from the converted acoustic energy. When the gas contains deuterium and tritium there is the feasibility of the other energy form being fusion, namely including the generation of neutrons.

96 Claims. 26 Drawing figures

Number of Drawing Sheets: 23

----- KWIC -----

Detailed Description Text - DETX:

3) The SL pulses are dim. You can see the **bubble "glow"** in a darkened room. Bright pulses from a bubble, initially seeded as air into degassed water at room temperature and pressure, can contain a million photons. By simply changing drive parameters there is no regime where the SL gets anomalously bright. The flashes have uniform intensity and are spherically symmetric.

Detailed Description Text - DETX:

As seen in FIG. 10, the bubble again loses its stability when the drive is increased beyond the dancing threshold. In this regime the bubble moves violently around the center of the sphere, and has the appearance of a collection of bubbles. As the drive is increased above the lower SL threshold, the dancing ceases and the now stabilized bubble appears very small. The **bubble glows** very dimly at the threshold but gets ever brighter as drive is increased. Unfortunately there is an upper limit. Near the upper SL threshold the light emitting bubble will begin to blink; it dims suddenly then returns to its original brightness gradually on the scale of a few seconds. Above the upper SL threshold the bubble will be destroyed during one of these blinks. When data are to be acquired from the SL emission, a drive level should be chosen to make the SL bright enough for the measurement, but the drive level should also be kept low enough so that the bubble's stability is not sacrificed.

US-PAT-NO: 5256725

DOCUMENT-IDENTIFIER: US 5256725 A

TITLE: Polymerizable luminescent fluid composition and its use

DATE-ISSUED: October 26, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Eranian; Armand	Sevres	N/A	N/A	FR
Jacquinet; Eric	Attichy	N/A	N/A	FR

APPL-NO: 07/ 894326

DATE FILED: June 4, 1992

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
FR	91 07312	June 14, 1991

US-CL-CURRENT: 524/558; 252/301.4F ; 252/301.4H ; 252/301.4P ; 252/301.4R ; 252/301.4S ; 252/301.5 ; 523/172 ; 524/418 ; 524/420 ; 524/431 ; 524/432

ABSTRACT:

Polymerizable luminescent fluid composition, characterized by the fact that it contains by weight (a) 30 to 45% of one or more luminescent mineral pigments, (b) 10 to 30% of silica particles, having a diameter comprised between 7 and 1000 nm, not linked to each other by siloxane bonds, and (c) the complement to 100% of 2-hydroxy ethyl acrylate and/or 2-hydroxy ethyl methacrylate and use for obtaining luminescent compounds.

14 Claims, 0 Drawing figures

Exemplary Claim Number: 1

----- KWIC -----

Brief Summary Text - BSTX:

The compositions according to the present invention are intended to be polymerized. Due to their high reactivity this polymerization can be initiated at a relatively low temperature, lower than 60.degree. C., and with a low content of polymerization initiator. Quite obviously, the initiation temperature is a function in particular of the nature of the initiating agent used. Advantageously, the polymerization initiator chosen is a known azo

50.degree. C. Once the polymerization reaction is initiated, either by standard initiators such as those of peroxide type, or preferably by known initiators of azo type, polymerization is allowed to develop, and then, if necessary, it is terminated by gentle heating at a temperature of less than 70.degree. C. for 30 to 60 minutes. In this way a solid compound is obtained which has no **bubbles or cracks and in which the luminescent** pigments used are evenly distributed. During the preparation of very thick luminescent solid compounds, it is often beneficial to use a composition according to the present invention, containing by weight more monomers of the methacrylic acid family than of the acrylic acid family. Indeed, the acrylic monomers are clearly more reactive than the methacrylic monomers and, during polymerization, the exothermic reaction sometimes develops too quickly leading to local overheating which may damage the solid support used and/or lead to delamination.

Detailed Description Text - DETX:

0.3 g of 2,2'-azobis(2,4-dimethylvaleronitrile) is introduced at ambient temperature into this composition, that is 0.6% relative to the total weight of the composition, then it is poured into a narrow gap of 1.5 mm between two glass plates held by a plastic joint. The whole assembly is then heated externally at 50.degree. C. for 30 minutes. The exothermic reaction of polymerization starts, then when the temperature of the whole body again returns to 50.degree. C., this temperature is maintained by external heating. After cooling down to ambient temperature, a homogeneous, solid **luminescent panel is obtained, with no bubbles or cracks or delamination, constituted by luminescent** pigments trapped inside a resin contained between two glass plates.

Detailed Description Text - DETX:

0.6 g (0.36% by weight) of 2,2'-azobis(2,4-dimethylvaleronitrile) is then introduced into the preceding composition, and it is poured into a 2 mm gap between two glass plates held by a plastic joint. The whole assembly is maintained for 45 minutes at 50.degree. C., then it is cooled down to ambient temperature. In this way a **luminescent panel is obtained with no bubbles**, or cracks, or delamination, having a homogeneous density of luminescent pigments.

Detailed Description Text - DETX:

Next 0.18 g of azobisisobutyronitrile is introduced into this mixture under agitation and at ambient temperature, and then this solution is heated progressively to 35.degree. C. At this temperature the polymerization reaction starts and it is completely finished in 10 minutes. After cooling down to ambient temperature, a luminescent solid compound is obtained which has no **bubbles or cracks and has a homogeneous density of luminescent** pigments.

US-PAT-NO: 5246631

DOCUMENT-IDENTIFIER: US 5246631 A

TITLE: Self-illuminated bubbles

DATE-ISSUED: September 21, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Halbritter; Martin J.	Kapaau	HI	96755	N/A

APPL-NO: 07/ 704776

DATE FILED: May 23, 1991

US-CL-CURRENT: 252/700; 446/15

ABSTRACT:

Self-illuminated bubbles are disclosed wherein the bubbles are formed utilizing a bubble blowing solution which includes a sufficient amount of a surface active agent to form the bubbles and a sufficient amount of a chemiluminescent agent to provide self-illumination of the bubbles. The bubble blowing solution includes a surface active agent to provide formation of the bubble and a chemiluminescent agent such as CYALUME.RTM.. A kit for preparing the self-illuminated bubble blowing solution is also disclosed.

7 Claims, 0 Drawing figures

Exemplary Claim Number: 1

----- KWIC -----

Abstract Text - ABTX:

Self-illuminated bubbles are disclosed wherein the bubbles are formed utilizing a bubble blowing solution which includes a sufficient amount of a surface active agent to form the bubbles and a sufficient amount of a chemiluminescent agent to provide self-illumination of the bubbles. The bubble blowing solution includes a surface active agent to provide formation of the bubble and a chemiluminescent agent such as CYALUME.RTM.. A kit for preparing the self-illuminated bubble blowing solution is also disclosed.

Brief Summary Text - BSTX:

can be added to conventional bubble blowing solutions in amounts which are sufficient to provide self-illumination of the bubbles without deleteriously affecting the capability of the solution to form suitable bubbles. A bubble blowing solution in accordance with the present invention includes a sufficient amount of a surface-active agent to provide formation of the bubbles when a gas is introduced into contact with the solution and a sufficient amount of a **chemiluminescent agent to provide self-illumination of the bubbles**. As a feature of the present invention, the chemiluminescent agent is an oxalate diester which reacts with a peroxide and a fluorescer to provide the self-illumination of the bubble. The chemiluminescent agent, such as CYALUME.RTM. available from American Cyanamide, can be added to the bubble blowing solution in amounts up to about 20 volume percent.

Brief Summary Text - BSTX:

The present invention provides a simple and effective method for illuminating bubbles for use in a wide variety of educational, entertainment and recreational settings. The self-illuminated bubbles in accordance with the present invention provide an especially attractive **bubble which provides a unique visual glow** in the dark. The above-discussed and many other features and attendant advantages of the present invention will become better understood by reference to the following detailed description.

Detailed Description Text - DETX:

The present invention is based upon the addition of a **chemiluminescent agent to an otherwise conventional bubble** blowing solution. The chemiluminescent agent can be added to a wide variety of bubble blowing solutions provided that there is no deleterious reaction between the **chemiluminescent agent and the bubble** blowing solution. Suitable bubble blowing solutions may include anionic, cationic, non-ionic and ampholytic surfactants. Many of the conventional solutions utilized in bubble blowing kits or in conjunction with bubble blowing machinery are suitable provided that a sufficient amount of a surface active agent is included to provide formation of bubbles when a gas is introduced into contact with the solution.

Detailed Description Text - DETX:

The **chemiluminescent agent which is added to the bubble** blowing solution in accordance with the present invention may be selected from a wide variety of light producing materials. However, the preferred chemiluminescent agent includes an oxalate diester which reacts with a peroxide and a fluorescer to provide the emission of light. This particular light emitting compound and chemiluminescent reaction is well-known and forms the basis for a variety of chemiluminescent compositions.

Detailed Description Text - DETX:

mixed with peroxide and a fluorescer. Once the reaction begins, the period over which light will be emitted can range from a few minutes to a few hours. Accordingly, it is preferred, in accordance with the present invention, that the combination of oxalate diester with a peroxide and a fluorescer be delayed until just prior to use in the bubble blowing solution. Preferably, a bubble blowing kit is provided wherein the bubble blowing solution comprising the surface active agent is packaged separately from the chemiluminescent agent. The kit includes instructions for mixing the chemiluminescent materials together to form the chemiluminescent agent. The instructions further describe the process for mixing the **chemiluminescent agent with the bubble** blowing solution in order to make the solution light emitting. Alternatively, the bubble blowing solution may contain the oxalate diester with the peroxide and fluorescer being packaged separately.

Detailed Description Text - DETX:

The amount of **chemiluminescent agent which can be added to the bubble** blowing solution may be varied in order to provide the desired degree of illumination. Preferably, the amount of chemiluminescent agent will not exceed about 20 volume percent. Larger amounts of chemiluminescent agent do not substantially increase the amount of light emitted and also tend to reduce bubble quality.

Claims Text - CLTX:

1. A self-illuminated bubble comprising a solution containing a sufficient amount of a surface active agent to provide formation of said **bubble and a sufficient amount of a chemiluminescent agent to provide self-illumination of said bubble**.

Claims Text - CLTX:

4. A self-illuminated **bubble according to claim 1 wherein said chemiluminescent** agent comprises an oxalate diester which reacts with a peroxide and a fluorescer to provide said self-illumination of said bubble.

Claims Text - CLTX:

5. A self-illuminated **bubble according to claim 4 wherein said chemiluminescent** agent comprises an oxalate diester, said peroxide and said fluorescer.

US-PAT-NO: 5171996

DOCUMENT-IDENTIFIER: US 5171996 A

TITLE: Particle detector spatial resolution

DATE-ISSUED: December 15, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Perez-Mendez; Victor	Berkeley	CA	N/A	N/A

APPL-NO: 07/ 738529

DATE FILED: July 31, 1991

US-CL-CURRENT: 250/361R; 216/20 ; 216/79 ; 216/99 ; 250/370.09 ; 250/370.11 ; 427/64

ABSTRACT:

Method and apparatus for producing separated columns of scintillation layer material, for use in detection of X-rays and high energy charged particles with improved spatial resolution. A pattern of ridges or projections is formed on one surface of a substrate layer or in a thin polyimide layer, and the scintillation layer is grown at controlled temperature and growth rate on the ridge-containing material. The scintillation material preferentially forms cylinders or columns, separated by gaps conforming to the pattern of ridges, and these columns direct most of the light produced in the scintillation layer along individual columns for subsequent detection in a photodiode layer. The gaps may be filled with a light-absorbing material to further enhance the spatial resolution of the particle detector.

34 Claims, 12 Drawing figures

Exemplary Claim Number: 31

Number of Drawing Sheets: 5

----- KWIC -----

Brief Summary Text - BSTX:

A method for vapor deposition of a luminescent layer on a screen for image intensification is disclosed by Ligtenberg et al in U.S. Pat. No. 4,842,894. The vapor deposition crucible is positioned at about 20.degree. relative to the normal to the screen, and gaps formed between columns of the luminescent material appear to be of elongated elliptical

or a vacuum). The luminescent material apparently forms predominantly crystalline columns of this material.

US-PAT-NO: 5000764

DOCUMENT-IDENTIFIER: US 5000764 A

TITLE: Blood storage container

DATE-ISSUED: March 19, 1991

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Oshiyama; Hiroaki	Fuji	N/A	N/A	N/A
Kuroo; Takeshi	Fuji	N/A	N/A	JP

APPL-NO: 07/ 393518

DATE FILED: August 14, 1989

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	63-211645	August 26, 1988

US-CL-CURRENT: 96/219; 210/188 ; 210/436 ; 55/487

ABSTRACT:

A blood storage container includes a blood storage chamber having a blood outlet port, a blood inlet chamber disposed upstream of the blood storage chamber with respect to a direction in which blood to be stored flows, a blood debubbler for debubblizing the blood, the blood debubbler being disposed between the blood inlet chamber and the blood storage chamber, and an air bubble stop unit for preventing air bubbles in the blood from flowing therethrough, the air bubble stop unit being disposed downstream of the blood debubbler. The air bubble stop unit has mesh screens of different mesh sizes which are supported in a frame that is detachably disposed in the blood storage chamber.

9 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 5

----- KWIC -----

Detailed Description Text - DETX:

More specifically, the mesh size of the mesh screen 12 should range from 50 to

mesh/inch, and the mesh size of the mesh screen 13 should range from 125 to 300, and more preferably from 150 to 250 mesh. Each of the mesh screens 12, 13 is of a plain weave woven of polyester filaments. The mesh screen 12 should preferably have a filament diameter of 55 μm and a thickness of 95 μm and the mesh screen 13 should preferably have a filament diameter of 45 μm and a thickness of 75 μm . In the embodiment shown in FIG. 2, the width between adjacent filaments of the mesh screen 12, i.e., the mesh opening, is 199 μm with an opening area of 61%, whereas the mesh opening of the mesh screen 13 is 124 μm with an opening area of 54%. The material of the mesh screens 12, 13 should not activate the blood constituents upon contact with the blood. Examples of the material of the mesh screens 12, 13 include polyvinyl chloride, polyethylene, polypropylene, polyester, polycarbonate, or the like. It may be preferable to coat the filaments of the mesh screens 12, 13 with silicone resin because the silicone coating will vary the surface tension to permit air bubbles attached to the filaments to glow and be removed from the blood.

US-PAT-NO: 4471469

DOCUMENT-IDENTIFIER: US 4471469 A

TITLE: Negative resistance bubble memory and display device

DATE-ISSUED: September 11, 1984

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Boyers; David G.	Mountain View	CA	N/A	N/A

APPL-NO: 06/ 435682

DATE FILED: October 18, 1982

PARENT-CASE:

This application is a continuation in part of co-pending application Ser. No. 390,689 filed June 21, 1982, by David Boyers for "Plasma Bubble Display and Memory Device."

US-CL-CURRENT: 365/116; 313/586 ; 315/169.1 ; 365/159 ; 365/73

ABSTRACT:

Disclosed is a memory or display device which includes a shift register having a bubble generator, a bubble propagator, and a bubble annihilator. Front and back glass plates are provided with dielectric-covered, transparent electrodes with the plates being positioned in spaced, parallel alignment. A suitable medium having a bilaterally symmetric V-J characteristic with a current controlled negative resistance region is provided between the plates and in contact with the dielectric covering the transparent electrodes. Bubbles are moved along an asymmetric track in the propagator by modulating voltage on two electrodes on opposing sides of the asymmetric track.

26 Claims, 31 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 11

----- KWIC -----

Detailed Description Text - DETX:

The first and second properties concerning the influence of applied voltage on

There is a range of stable bubble diameters as the applied voltage is increased ($D_{\text{sub.max}}/D_{\text{sub.min}} \cong 1.4$, $D_{\text{sub.min}} \cong 175 \text{ } \mu\text{m}$) (FIG. 2(a) and FIG. 2(b)). There is a transition from large bubble domains to stripe domains, as the voltage is increased further (FIG. 2(c)). There is a transition from stripes to hexagonally woven stripes (HWS), to a uniform glow, which occurs at even higher applied voltages (FIG. 2(d) and FIG. 2(e)). The stripe domains have a range of stable widths before they make the transition to the HWS domain pattern. The non-glowing regions of the HWS domain pattern form a hexagonal array of non-**glowing bubbles** which have a range of stable diameters prior to their collapse to a bright uniform glow. FIG. 5(f) shows a scale photographed under the same magnification. The smallest division is $100 \text{ } \mu\text{m}$.

US-PAT-NO: 4369498

DOCUMENT-IDENTIFIER: US 4369498 A

TITLE: Photoluminescent powered calculator

DATE-ISSUED: January 18, 1983

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schulte; Eric F.	Richardson	TX	N/A	N/A

APPL-NO: 06/ 226299

DATE FILED: January 19, 1981

US-CI -CURRENT: 713/321; 136/247 ; 136/259 ; 136/291 ; 368/205

ABSTRACT:

A photoluminescent dye is suspended in a transparent medium. When exposed to light, the dye re-emits light in a narrow frequency range. Photovoltaic cells responsive to the re-emitted light are arranged around the sides of the collector medium, and are electrically connected to a low power demand device, such as a calculator. A reflective surface is placed next to the collector medium and kept a slight distance away such that an air gap is formed between the collector and the reflective surface. This gap increases the efficiency of the collector to the point that the collector will operate a small calculator even though exposed to low light levels such as are normal in an office environment.

8 Claims, 4 Drawing figures

Exemplary Claim Number: 4,7

Number of Drawing Sheets: 3

----- KWIC -----

Detailed Description Text - DETX:

Referring now to FIG. 2, the collector 11, is shown as a solid such as plastic or glass. Liquids are also useful as collector mediums; however, a solid is less expensive to use primarily because the handling required is less complex in a manufacturing environment; there is no chance for leakage or for bubbles to occur; and the proper distribution of luminescent dye is not a problem subsequent to the manufacturing of the solid collector medium

US-PAT-NO: 4103430

DOCUMENT-IDENTIFIER: US 4103430 A

TITLE: Viewing device for a bubble level

DATE-ISSUED: August 1, 1978

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schrader, Joseph F.	New Hartford	NY	13413	N/A

APPL-NO: 05/ 829443

DATE FILED: August 31, 1977

US-CL-CURRENT: 33/348; 362/84

ABSTRACT:

A viewing device for use in conjunction with a level of the type having a see through bubble housing comprising two opposed windows and a bubble chamber situated therebetween. The device includes a base containing a luminescent panel that is arranged to seat in contact against one of the bubble housing windows whereby the panel illuminates the bubble chamber, a post perpendicularly secured to the base and extending upwardly beyond the other bubble housing window and a light shield slidably mounted upon the post and being arranged to seat in locking engagement against the other bubble window, the light shield containing a viewing aperture through which the bubble chamber can be seen and a mirror adjustably supported in the shield to permit off axis reading of the bubble.

8 Claims, 4 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 1

----- KWIC -----

Brief Summary Text - BSTX:

These and other objects of the present invention are attained by means of a device for extending the readability of a bubble level of the type having a bubble chamber positioned between opposed viewing windows, the device including a base being arranged to seat in contact against one of the bubble housing windows and having a luminescent panel contained therein, a post

bubble housing window, a light shield slidably mounted upon the post and being arranged to move into seating contact against the opposite bubble housing window, the light shield further including a central viewing aperture therein through which the bubble chamber may be seen and a mirror adjustably supported therein to allow the bubble to be read accurately from a number of different viewing positions.

Detailed Description Text - DETX:

In operation, the bubble viewing device 10 is mounted upon the levelling instrument 11 by first seating the gasket bearing end face of the base in contact against one of the windows of the bubble housing. This places the **luminescent disc in close proximity with the bubble** tubes as shown in FIG. 2. With the base properly seated against the window, the post 30 extends upwardly beyond the top margin of the level. The annular support member 34, with the light shield rotatably mounted therein, is then slipped over the free end of the post via slotted groove 37 and brought down until the gasket bearing end face of the light shield is seated against the other window of the bubble housing. Because the post and the slotted groove 37 are both rectangular in form, all the cojoined elements can be conveniently located for coaxial alignment in assembly along axis 63. By exerting a slight deforming pressure against the resilient gaskets prior to tightening down on the thumb screw 40, the entire assembly can be clamped in place against the level.

Detailed Description Text - DETX:

The light emitting properties of the luminescent disc are matched with the area of the central viewing aperture 444 so as to provide effective illumination of the bubble chamber regardless of ambient lighting conditions. As can be seen, when the lighting is poor, the light shield functions to contain the disc generated illumination within the primary viewing region. On the other hand, if the ambient light is overly intense, the light shield again can be employed to protect the viewing region from the disturbing effects of the intense illumination while, at the same time, the **luminescent disc clearly defines the bubble** area.